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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/753,413	01/02/2001	David Benedict Bradshaw	MS1-622US	1884

22971 7590 10/17/2005

MICROSOFT CORPORATION
ATTN: PATENT GROUP DOCKETING DEPARTMENT
ONE MICROSOFT WAY
REDMOND, WA 98052-6399

EXAMINER	
DESIRE, GREGORY M	
ART UNIT	**PAPER NUMBER**
2627	

DATE MAILED: 10/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/753,413	BRADSHAW, DAVID BENEDICT	
	Examiner	Art Unit	
	Gregory M. Desire	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 January 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 January 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/23/01*.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-6, 10, 12-16, 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daniell et al (6,678,421) in view of Yang et al (1999 IEEE, A Semantic classification and composite indexing approach to robust image retrieval). Regarding method and computer readable medium claims 1,13 and 23 Daniell discloses,

Obtaining an image and subdividing such image into multiple hierarchical layered blocks (note col. 5 lines 41-45 and 63-67, col. 6 lines 1-6, decomposing original image into multiple levels blocks), the blocks within a layer being at least partially coextensive (see fig. 2 and col. 6 lines 1-6, in multilevel decomposition, smaller block is a smaller part of the larger block, i.e. level 2 is coextensive to part of level 1);

Determining a posterior estimate of class membership of hierarchical layered blocks (as described in specification page 28 lines 18-19, examiner interprets determining posterior estimates of class membership of hierarchical layered blocks as using Bayes rule based on multilevel sub bands (note col. 7 lines 7-28), the estimated being bases upon class likelihoods of the hierarchical layered blocks in the group (note col. 7 lines 7-28, Bayes rules is based upon the probability of significant and

insignificants of the level sub bands), such likelihood being condition on data extracted from hierarchical layered blocks in the group (note col. 3 lines 3-9, col. 6 lines 5-28 and col. 7 lines 1-20, probability being condition on predicted coefficients from sub band levels).

Classifying a portion of such image based upon the posterior estimate of class membership conditioned on the data extracted from the group of hierarchical layered blocks local to such portion (note fig. 7 choose class z and col. 6 lines 7-27, 56-65 col. 7 lines 49-65, classifying high frequency signal using Bayes rules of low frequency information (sub band levels)).

Although Daniell discloses coefficient prediction scheme of sub bands based on content of the input, which is the source of the information. Daniell does not clearly disclose semantically classifying a portion of the image. Yang et al discloses semantically classifying an image (note page136, col. 1 lines 1-4, images similar semantic meanings wide variety of low-level features). Daniell and Wang are combinable because they disclose classifiers. At the time of the invention, it would have been obvious to a person of ordinary skills in the art to semantically classify a portion of an image in the system of Daniell as evidenced by Yang et al. The suggestion/motivation for doing so would have been improving image classification and bridging the gap between low-level features and high-level semantic meanings (note page 134, col. 2 lines 3-6). Therefore, it would have been obvious to combine Daniell with Yang to obtain the invention as specified in claim 1.

Regarding claim 2 Daniell discloses,

Determining an estimated class likelihood of each block in the group of hierarchical layered blocks (note col. 7 lines 1-27 and col. 8 lines 6-8, lines cite p (m, z) a likelihood slope value generating an insignificant coefficient each base on coefficient of each band in the group of levels);

Combining the estimated class likelihood of hierarchical layered blocks in the group into a posterior estimate of class membership (note col. 7 lines 23-27, a joint probability is formed by combining p (m, z) P (z) and p (m, nz) into Bayes rule).

Although Daniell discloses coefficient prediction scheme of sub bands based on content of the input, which is the source of the information. Daniell does not clearly disclose semantically classifying. Yang et al discloses semantically classifying (note page136, col. 1 lines 1-4, images similar semantic meanings wide variety of low-level features). Daniell and Wang are combinable because they disclose classifiers. At the time of the invention, it would have been obvious to a person of ordinary skills in the art to semantically classify in the system of Daniell as evidenced by Yang et al. The suggestion/motivation for doing so would have been improving image classification and bridging the gap between low-level features and high-level semantic meanings (note page 134, col. 2 lines 3-6). Therefore, it would have been obvious to combine Daniell with Yang to obtain the invention as specified in claim 2

Regarding claim 3 Daniell discloses,

Repeating the classifying for each of multiple portions that substantially covers the entire image (note col. 9 lines 30-48, algorithm include classifying of sub bands over an image, in one level and applied to recursively to other levels).

Categorizing the entire image based upon the result of such repeating classifying (note col. 9 lines 30-48, coefficient are classified over the image based on recursive algorithm).

Regarding method claim 4 Daniell discloses,

Wherein each successively lower layer of the multiple hierarchical layered blocks is comprised of one or more blocks which are smaller than and at least partially coextensive with one or more blocks in a layer immediately above (fig. 2, multilevel decomposition shows layered blocks comprised of one or more blocks which are smaller than at leas partially coextensive a layer immediately above).

Regarding claim 5

Although Daniell discloses, extracting features from blocks. Daniel does not clearly disclose extracting low-level features from blocks. Yang discloses extracting low-level features (note page 136 col. 1 lines 1-4 and page 137 col. 1 lines 19-24, images containing low-level feature vectors). Daniell and Wang are combinable because they disclose classifiers. At the time of the invention, it would have been obvious to a person of ordinary skills in the art to extract low-level features in the system of Daniell as evidenced by Yang et al. The suggestion/motivation for doing so would

have been improving image classification and bridging the gap between low-level features and high-level semantic meanings (note page 134, col. 2 lines 3-6). Therefore, it would have been obvious to combine Daniell with Yang to obtain the invention as specified in claim 5.

Regarding method claim 6

Although Daniell discloses, extracting features from blocks. Daniel does not clearly disclose extracting low-level features comprise color and texture. Yang discloses low-level features comprise color and texture (note page 136 paragraph 3 lines 5-13 and page 137 col. 1 lines 1-4, feature background extraction low level where color is relevant and texture class texture is relevant). Daniell and Wang are combinable because they disclose classifiers. At the time of the invention, it would have been obvious to a person of ordinary skills in the art to extract low-level features comprising color and texture in the system of Daniell as evidenced by Yang et al. The suggestion/motivation for doing so would have been improving image classification and bridging the gap between low-level features and high-level semantic meanings (note page 134, col. 2 lines 3-6). Therefore, it would have been obvious to combine Daniell with Yang to obtain the invention as specified in claim 6.

Regarding claim 10 Daniell discloses,

Wherein a classification that results from the classifying step is binary (note col. 11 lines 38-40, shows results as binary strings). Daniell does not clearly disclose

semantically classifying. Yang et al discloses semantically classifying (note page136, col. 1 lines 1-4, images similar semantic meanings wide variety of low-level features). Daniell and Yang are combinable because they disclose classifiers. At the time of the invention, it would have been obvious to a person of ordinary skills in the art to semantically classifying in the system of Daniell as evidenced by Yang et al. The suggestion/motivation for doing so would have been improving image classification and bridging the gap between low-level features and high-level semantic meanings (note page 134, col. 2 lines 3-6). Therefore, it would have been obvious to combine Daniell with Yang to obtain the invention as specified in claim 10.

Regarding method claim 12

Daniell discloses an image classification method. Daniell does not clearly disclose searching for images matching a given query in an image library containing images having portions thereof classified using the semantic image classification method. Yang et al discloses searching for images matching a given query in an image library containing images having portions thereof classified using the semantic image classification method (note page 136 paragraph 3 lines 1-4, page 137, paragraph 4 lines 21-35 and page138 col. 1 lines 1-20, images are search matching a query seed from databases using semantic image classification). Daniell and Yang are combinable because they disclose classifiers. At the time of the invention, it would have been obvious to a person of ordinary skills in the art to search for images matching a given query in an image library containing images having portion thereof classified using

semantic image classification in the system of Daniell as evidenced by Yang et al. The suggestion/motivation for doing so would have been improving image classification and bridging the gap between low-level features and high-level semantic meanings and for performance of retrieval system multi-feature templates performs better than other templates (note page 134, col. 2 lines 3-6 and page 138 col. 2 lines 1-10). Therefore, it would have been obvious to combine Daniell with Yang to obtain the invention as specified in claim 12.

Regarding system and computer readable claims 14 and 22, respectively Daniell discloses,

Estimate class likelihoods for each block (note col. 7 lines 7-28, Bayes rules estimates the probability of each sub bands), a class being discriminating classification (class being significant and insignificant features of the sub bands) and a block being portion of the image (sub band is a portion of the image);

Generates a posterior estimated of class membership based on combining estimated class likelihoods of hierarchical sets of blocks (note col. 7 lines 23-27, a joint probability is formed by combining p (m, z) P (z) and p (m, nz) into Bayes rule), a hierarchical set of blocks being hierarchical organized (note col. 5 lines 41-45 and 63-67, col. 6 lines 1-6, decomposing original image into hierarchical set of blocks (multiple levels blocks)) and associated blocks that are, at least partially coextensive (see fig. 2 and col. 6 lines 1-6, in multilevel decomposition, smaller block is a smaller part of the larger block, i.e. level 2 is coextensive to part of level 1);

Determine and classify one of multiple discriminating classifications to localize portions of the image based upon the posterior estimate of class membership of blocks comprising such portions (note fig. 7 choose class z and col. 6 lines 7-27, 56-65 col. 7 lines 49-65, classifying high frequency signal using Bayes rules of low frequency information (sub band levels)).

Although Daniell discloses coefficient prediction scheme of sub bands based on content of the input, which is the source of the information. Daniell does not clearly disclose semantically classifying. Yang et al discloses semantically classifying (note page136, col. 1 lines 1-4, images similar semantic meanings wide variety of low-level features). Daniell and Wang are combinable because they disclose classifiers. At the time of the invention, it would have been obvious to a person of ordinary skills in the art to semantically classify in the system of Daniell as evidenced by Yang et al. The suggestion/motivation for doing so would have been improving image classification and bridging the gap between low-level features and high-level semantic meanings (note page 134, col. 2 lines 3-6). Therefore, it would have been obvious to combine Daniell with Yang to obtain the invention as specified in claim 14

Although Daniell discloses, extracting features from blocks. Daniel does not clearly disclose extracting low-level features from blocks. Yang discloses extracting low-level features (note page 136 col. 1 lines 1-4 and page 137 col. 1 lines 19-24, images containing low-level feature vectors). Daniell and Wang are combinable because they disclose classifiers. At the time of the invention, it would have been obvious to a person of ordinary skills in the art to extract low-level features in the system

of Daniell as evidenced by Yang et al. The suggestion/motivation for doing so would have been improving image classification and bridging the gap between low-level features and high-level semantic meanings (note page 134, col. 2 lines 3-6). Therefore, it would have been obvious to combine Daniell with Yang to obtain the invention as specified in claim 14.

Regarding system claim 15 Daniell discloses,

Wherein each successively lower layer of the multiple hierarchical layered blocks is comprised of one or more blocks which are smaller than and at least partially coextensive with one or more blocks in a layer immediately above (fig. 2, multilevel decomposition shows layered blocks comprised of one or more blocks which are smaller than at leas partially coextensive a layer immediately above).

Regarding system claim 16

Although Daniell discloses, extracting features from blocks. Daniel does not clearly disclose extracting low-level features comprise color and texture. Yang discloses low-level features comprise color and texture (note page 136 paragraph 3 lines 5-13 and page 137 col. 1 lines 1-4, feature background extraction low level where color is relevant and texture class texture is relevant). Daniell and Wang are combinable because they disclose classifiers. At the time of the invention, it would have been obvious to a person of ordinary skills in the art to extract low-level features comprising color and texture in the system of Daniell as evidenced by Yang et al. The

suggestion/motivation for doing so would have been improving image classification and bridging the gap between low-level features and high-level semantic meanings (note page 134, col. 2 lines 3-6). Therefore, it would have been obvious to combine Daniell with Yang to obtain the invention as specified in claim 16

Regarding system claim 21

Daniell discloses an image classification method. Daniell does not clearly disclose searching for images matching a given query in an image library containing images having portions thereof classified using the semantic image classification method. Yang et al discloses searching for images matching a given query in an image library containing images having portions thereof classified using the semantic image classification method (note page 136 paragraph 3 lines 1-4, page 137, paragraph 4 lines 21-35 and page138 col. 1 lines 1-20, images are search matching a query seed from databases using semantic image classification). Daniell and Yang are combinable because they disclose classifiers. At the time of the invention, it would have been obvious to a person of ordinary skills in the art to search for images matching a given query in an image library containing images having portion thereof classified using semantic image classification in the system of Daniell as evidenced by Yang et al. The suggestion/motivation for doing so would have been improving image classification and bridging the gap between low-level features and high-level semantic meanings and for performance of retrieval system multi-feature templates performs better than other templates (note page 134, col. 2 lines 3-6 and page 138 col. 2 lines 1-10). Therefore, it

would have been obvious to combine Daniell with Yang to obtain the invention as specified in claim 21.

Regarding computer readable claim 24 Daniell discloses,

Obtaining an image and subdividing such image into multiple hierarchical layered blocks (note col. 5 lines 41-45 and 63-67, col. 6 lines 1-6, decomposing original image into multiple levels blocks), the blocks within a layer being at least partially coextensive (see fig. 2 and col. 6 lines 1-6, in multilevel decomposition, smaller block is a smaller part of the larger block, i.e. level 2 is coextensive to part of level 1);

Determining a posterior estimated of class membership by combining estimated likelihoods of hierarchical layered of blocks (note col. 7 lines 23-27, a joint probability is formed by combining p (m, z) P (z) and p (m, nz) into Bayes rule of each level),

Classifying a portion of such image based upon the posterior estimate of class membership conditioned on the data extracted from the group of hierarchical layered blocks local to such portion (note fig. 7 choose class z and col. 6 lines 7-27, 56-65 col. 7 lines 49-65, classifying high frequency signal using Bayes rules of low frequency information (sub band levels)).

Although Daniell discloses coefficient prediction scheme of sub bands based on content of the input, which is the source of the information. Daniell does not clearly disclose semantically classifying a portion of the image. Yang et al discloses semantically classifying an image (note page136, col. 1 lines 1-4, images similar semantic meanings wide variety of low-level features). Daniell and Wang are

combinable because they disclose classifiers. At the time of the invention, it would have been obvious to a person of ordinary skills in the art to semantically classify a portion of an image in the system of Daniell as evidenced by Yang et al. The suggestion/motivation for doing so would have been improving image classification and bridging the gap between low-level features and high-level semantic meanings (note page 134, col. 2 lines 3-6). Therefore, it would have been obvious to combine Daniell with Yang to obtain the invention as specified in claim 24.

3. Claims 7 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daniell et al. and Yang et al. in further view of Ohta et al ("Color information for region segmentation", Computer Graphics and Image Processing, 13:222-241, 1980). Regarding method and system claims 7 and 17, respectively,

Although Daniell modified discloses extracting color low-level features. Daniell modified does not clearly disclose extracting color low-level features by Ohta decomposition. Ohta discloses extracting color low-level features by Ohta decomposition (note fig. 1, page 225, and fig. 4 page 230 and 231, describes extracting of color features by transformation process for segmenting images). Daniel modified and Ohta are combinable because they disclose segmenting of color features. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to disclose extracting color low-level features by Ohta decomposition in the system of Daniell modified as evidenced by Ohta et al. The suggestion/motivation for doing so would have been extracting non- degraded color features (page 230 last paragraph).

Therefore, it would have been obvious to combine Daniell modified with Ohta et al to obtain the invention specified in claims 7 and 17.

4. Claims 8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daniell et al. and Yang et al. in further view of Hatipoglu et al ("Texture classification using dual-tree complex wavelet transform", IEEE, 1999, 344-347).

Regarding method and system claims 8 and 18, respectively,

Although Daniell modified discloses extracting texture low-level features. Daniell modified does not clearly disclose extracting texture low-level features by complex wavelet transform. Hatipoglu et al discloses extracting texture low-level features by complex wavelet transformation (note page 345-346 paragraph 3, describes extracting texture features by dual tree complex wavelet transform). Daniel modified and Hatipoglu are combinable because they disclose segmenting of texture features. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to disclose extracting texture low-level features by Complex wavelet transform in the system of Daniell modified as evidenced by Hatipoglu et al. The suggestion/motivation for doing so would have been improved image restoration and enhancement and obtaining directional selectivity of features and separable filtering (note page 344 col. 1 lines 22-23 and page 345 col. 1 lines 26-27). Therefore, it would have been obvious to combine Daniell modified with Hatipoglu et al to obtain the invention specified in claims 8 and 18.

5. Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daniell et al. and Yang et al. in further view of Lu (6,317,517).

Regarding method and system claims 9 and 19, respectively,

Although Daniell modified discloses class likelihoods in dimensional space. Daniell modified does not clearly disclose class likelihoods estimated in one-dimensional space. Lu discloses reducing dimensions of data (note fig. 1 block 12 and col. 2 lines 8-25, reducing dimensions of data as described in specification page 29 lines 2-6). Daniel modified and Lu are combinable because they disclose class likelihood using Bayes rule. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to disclose class likelihood estimated in one-dimensional space in the system of Daniell modified as evidenced by Lu. The suggestion/motivation for doing so would have been improved statistical pattern recognition (note col. 2 lines 1-5). Therefore, it would have been obvious to combine Daniell modified with Lu to obtain the invention specified in claims 9 and 19.

6. Claims 11 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daniell et al. and Yang et al. in further view of Syeda-Mahmood (6,594,383).

Regarding method and system claims 11 and 20, respectively,

Although Daniell modified discloses classification that results from semantically classifying step is binary. Daniell modified does not clearly disclose a group consisting of sky or not-sky; grass or not-grass; natural or manmade; inside or outside; hair or not-

hair; face or not-face. Syeda-Mahmood discloses a group consisting of sky or not-sky; grass or not-grass; natural or manmade; inside or outside; hair or not-hair; face or not-face (note col. 5 lines 24-45, lines cite classifying surface class sky and grass, natural and manmade lightings, outdoor and indoor lightings). Daniel modified and Syeda-Mahmood are combinable because they disclose semantically classification. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to disclose classifying a group consisting of sky or not-sky; grass or not-grass; natural or manmade; inside or outside; hair or not-hair; face or not-face in the system of Daniell modified as evidenced by Syeda-Mahmood. The suggestion/motivation for doing so would have been increase statistical variations for more accurate surface recognition (note col. 5 lines 20-21, 37-40 and 46-48). Therefore, it would have been obvious to combine Daniell modified with Syeda-Mahmood to obtain the invention specified in claims 11 and 20.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory M. Desire whose telephone number is (571) 272-7449. The examiner can normally be reached on M-F (6:30-3:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gregory M. Desire
Examiner
Art Unit 2625

G.D.

September 29, 2005